

Remarks

This amendment is responsive to the official action mailed February 1, 2005, and is submitted together with a Petition for Extension under 37 C.F.R. §1.136(a), as Request for Continued Examination, and the fees required.

Claims 9-13 were considered indefinite under 35 U.S.C. §112, second paragraph, for lack of clear antecedent basis in claims 9 and 10 for "the plumbing fixtures." This matter has been corrected by appropriate revisions in claims 1, 9 and 10. The claims as amended are definite.

Claims 1-7 and 9-16 were rejected under 35 U.S.C. §102 as anticipated by US Pat. 4,443,028 – Hayes. Claims 1-16 also were rejected as anticipated by US Pat. 2,819,097 – Lang. Although claim 17 was not mentioned in the statement of the rejection, the application of the references to the claims includes mention of claim 17 and applicant will respond accordingly.

Reconsideration of the rejections is requested in view of this amendment. The prior art of record, including Hayes and Lang, fails to meet the subject matter claimed as a whole.

Hayes and Lang each concern connections between hose line coupling elements as opposed to connections between a line and a plumbing fixture in the sense of a structure that is mounted, i.e., fixed. An important aspect of applicant's invention is the prevention of inadvertent detachment of a line from a fixture. Inadvertent detachment of line-to-fixture connections can occur with movement of the line relative to the stationary fixture. Relative movement of a line-to-line connection is less likely to result in detachment. The ends of coupled lines are generally caused to move, either axially or rotationally, by movement of their coupled counterpart end.

Moreover, even if one construes the term "fixture" to encompass structures that might not be fixed stationary, or to be analogous to fixed structures, such as hose end

couplings, neither Hayes nor Lang meets the subject matter defined in applicant's claim 1 as a whole.

Applicant has amended claim 1 to incorporate the subject matter of claim 3, which is now canceled. Claim 1 as amended defines that the undercut of the fixture is configured such that the undercut and flange wedge together when the line is rotated. This aspect is missing in Hayes and Lang. Thus a rejection under 35 U.S.C. §102 is not warranted and should be withdrawn. Moreover, there is no suggestion in the prior art that would lead routinely to modifying the references to meet the subject matter claimed. Therefore, claim 1 and claims 2 and 4-17 depending from claim 1, are all properly allowable.

The prior art uses non-circular flanges at the ends of lines forming one of two connected members, with a complementary opening provided in the opposed member and having an associated undercut. The flange can be rotationally oriented to complement the opening. The end is axially advanced to move the flange beyond the undercut. The flange is then rotated so as to locate a part of the flange behind the undercut. If this position can be maintained, withdrawal of the line end in an axial direction is prevented by interference of the flange with the surface at the undercut.

However, there are other issues to be addressed. It may be desirable, for example, to achieve sealing, and the prior art proposes various axially resilient members.

Importantly, according to applicant's claimed invention, it is advantageous to embody the coupling in a way that prevents the line from being withdrawn from the fixture inadvertently, namely by providing a wedging engagement between the flange and the undercut structure.

In a line to fixture connection, it can be important to prevent the line from being disconnected inadvertently. This problem does not arise in the connection of two hoses as disclosed in US 4,443,028 – Hayes.

According to applicant's claimed invention, rotating the line end after having inserted the line end into the plug-in bushing causes wedging between the undercut and the flange of the line end. This aspect is now particularly defined in independent claim 1. The wedging action is illustrated by Figs. 15 and 16 in the drawings and supported in corresponding parts of the specification.

By comparison, in the assembled state of Hayes, e.g., as shown in Fig. 3, a resilient seal engages the frusta-conical sealing surface 54 of the male coupling portion 50. This frusta-conical surface is an extension of lugs 52. See Fig. 4. Although Hayes may seal by compression of a seal, there is no wedging action possible in the structure that Hayes discloses, against the surface 30. Instead, the lugs 52 run down a low pitched helical groove and are fixed at a position in which the seal is compressed. The Hayes structure is not characterized by any wedging of a flange with rotation as claimed.

Applicant's claimed invention is not disclosed by Hayes. Furthermore, Hayes teaches away from applicant's invention by providing a mechanical coupling structure wherein axial pressure for sealing results from compression of the seal, and the mechanical interaction of the edges of lugs 52 and surfaces 30 only resist axial displacement that would disconnect the coupled parts due to pressure from fluid flowing through the coupling as seen, for example, from col. 2, lines 25-29, concerning pressure operation. Hayes does not teach or suggest wedging with rotation. There is no support in Hayes for a rejection of claim 1 as amended under 35 U.S.C. §§102 or 103.

Lang patent 2,819,097 also teaches a non-round flange element that is inserted and twisted. As mentioned at col. 1 of Lang, the disclosed connector is intended for a high pressure air hose. As taught by Lang, in the connected state, tubular line 42 together with its outer flange 45 can be rotated by 360 degrees. Rotation through a full 360 degrees is also mentioned in col. 3, lines 58 to 65. Although full rotation of the tubular line member 42 is possible in this structure, the tubular member 42 cannot be axially withdrawn from the casing 11 so long as pressure is exerted on the piston formed by ring 38 and cap-shaped member 39.

The title of Lang (Hose coupling with fluid pressure responsive locking means) makes it clear that locking under pressure is the whole point. In the absence of pressure, the coupling can be easily disengaged because it is the fluid pressure, and not any wedging of a flange and undercut with rotation, that keeps the non-round flange rotationally fixed at an alignment where the flange cannot pass axially through the opening.

With plumbing fixtures and the like, which are not always pressurized, the line advantageously should be secured against the disconnection in both pressurized and non-pressurized states. Applicant accomplishes this by wedging, which is characterized by axially increasing pressure with rotation, between axially opposed surfaces. It can be seen that no wedging action is even possible in Lang, because there is a clear and substantial gap in an axial direction between the lower side of flange 35 and the upper surface of member 45 when the coupling is locked as shown in Fig. 2. There is no disclosure or suggestion of a wedging action. On the contrary, the prior art teaches away.


For all these reasons, the references relied upon under Section 102 do not fairly disclose the invention claimed as a whole. By amending claim 1 herein, applicant has clearly defined the matter of wedging due to rotation and this aspect is not found in the prior art references relied upon or in other prior art of record concerning couplings of the type claimed. Accordingly, the rejections under Section 102 should be withdrawn. Likewise, inasmuch as the references teach structurally and functionally different approaches to the issues of coupling of lines to fixtures, there is no basis to suppose that the reference could be routinely combined or modified to meet the invention. Therefore, no prima facie case of obviousness is presented.

The terms considered indefinite by the examiner have been corrected. The claims particularly and distinctly define the subject matter regarded as the invention. As discussed herein, the claims also clearly recite aspects that distinguish over the prior art of record. In fact the prior art does not address the problems solved by applicant. The differences between the invention and the prior art are such that the subject matter

claimed, as a whole, is not shown to have been known or obvious. Therefore, the claims as amended are in condition for allowance. Reconsideration and allowance are requested.

Respectfully submitted,

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